

## CLAIMS

What is Claimed is:

1. A collector optic assembly for collecting radiation, said assembly comprising:  
a heat exchanger fabricated from a plurality of sections fused together by a glass frit bonding process, said heat exchanger including a plurality of heat exchanger cooling channels;  
an elliptical meniscus machined from a single piece of silicon and being fused to the heat exchanger by a glass frit bonding process, said meniscus including a front reflective layer;  
an inlet manifold machined from a single piece of silicon and being fused to the heat exchanger by a glass frit bonding process, said inlet manifold including at least one inlet channel in fluid communication with the heat exchanger cooling channels; and  
an outlet manifold machined from a single piece of silicon and being mounted to the heat exchanger, said outlet manifold including at least one outlet channel in fluid communication with the heat exchanger cooling channels.
2. The assembly according to claim 1 wherein the inlet manifold includes four inlet openings for receiving four inlet pipes, and the outlet manifold includes four outlet openings for receiving four outlet pipes.

3. The assembly according to claim 1 wherein the inlet manifold is an annular member and the outlet manifold is a ring member.

4. The assembly according to claim 3 wherein the meniscus is fused to a front side of the heat exchanger and the inlet manifold and the outlet manifold are mounted to a back side of the heat exchanger, where the inlet manifold is fused to the back side of the heat exchanger within the outlet manifold.

5. The assembly according to claim 1 wherein the meniscus, the heat exchanger and the inlet manifold all include a center opening that are aligned.

6. The assembly according to claim 1 wherein the outer reflective layer is a Si/Mo multilayer.

7. The assembly according to claim 1 wherein the collector optic assembly is part of an EUV radiation source and wherein the radiation is EUV radiation.

8. A collector optic assembly for collecting radiation, said assembly comprising:  
a silicon heat exchanger, said heat exchanger including at least one cooling channel; and  
an elliptical silicon meniscus, said meniscus having a front reflective layer and

a back surface, said back surface being mounted to the heat exchanger.

9. The assembly according to claim 8 wherein the meniscus is fused to the heat exchanger by a glass frit bonding process.

10. The assembly according to claim 8 further comprising a silicon inlet manifold mounted to a back surface of the heat exchanger, said inlet manifold including at least one inlet channel in fluid communication with the at least one cooling channel.

11. The assembly according to claim 10 wherein the inlet manifold is fused to the back surface of the heat exchanger by a glass frit bonding process.

12. The assembly according to claim 10 wherein the meniscus, the heat exchanger and the inlet manifold all include a center opening that are aligned.

13. The assembly according to claim 8 further comprising a silicon outlet manifold mounted to a back surface of the heat exchanger, said outlet manifold including at least one outlet channel in fluid communication with the at least one cooling channel.

14. The assembly according to claim 8 wherein the reflective layer is a Si/Mo multilayer.

15. The assembly according to claim 8 wherein the collector optic assembly is part of an EUV radiation source and wherein the radiation is EUV radiation.

16. A method for assembling a collector optic for collecting radiation, said method comprising:

fabricating a heat exchanger from one or more silicon pieces so that the heat exchanger includes at least one heat exchanger cooling channel;

machining an elliptical meniscus from a single piece of silicon so that the meniscus has a front surface and a back surface;

depositing a reflective outer layer on the front surface of the meniscus; and

fusing the back surface of the meniscus to the heat exchanger by a glass frit bonding process.

17. The method according to claim 16 further comprising machining an inlet manifold from a single piece of silicon so that the inlet manifold includes at least one inlet channel and fusing the inlet manifold to a back surface of the heat exchanger by a glass frit bonding process so that the inlet channel is in fluid communication with the heat exchanger cooling channel.

18. The method according to claim 16 further comprising machining an outlet manifold from a single piece of silicon so that the outlet manifold includes at least one

outlet channel and mounting the outlet manifold to the heat exchanger so that the outlet channel is in fluid communication with the heat exchanger cooling channel.

19. The method according to claim 16 wherein depositing a reflective outer layer on the front surface of the meniscus includes depositing a Si/Mo multilayer.

20. The method according to claim 16 wherein fabricating the heat exchanger and machining the meniscus includes machining a center opening in the heat exchanger and a center opening in the meniscus that are aligned when the meniscus is fused to the heat exchanger.